

Claims

We claim:

1. A system for distributing electronic documents, said system comprising:

a first computer;

a second computer;

a third computer; and

a network over which information may be transferred from said second and third computers to said first computer, wherein said first computer is configured for:

receiving operating sequence command data;

accessing an electronic document over said network by downloading, via at least two separate downloads, a plurality of data segments that are associated with an electronic document and that represent an encrypted form of said electronic document, at least one of said downloads being from said second computer and at least one of said downloads being from said third computer, said electronic document being encrypted by the effect of said operating sequence command data determining the order of said data segments, said plurality of data segments not being usable by a user as downloaded;

accessing reconstruction data over said network; and

using said reconstruction data and said encrypted form of said electronic document to make said electronic document available for use in a suitable decrypted form.

2. The system of Claim 1, wherein:

said first computer is associated with a first user;

said second computer is associated with a second user; and

said third computer is associated with a third user.

3. The system of Claim 1, wherein said first, second, and third computers are participant units.

4. The system of Claim 1, wherein said operating sequence command data is user-specific.

5. The system of Claim 1, wherein said operating sequence command data is document-specific.

6. The system of Claim 1, wherein said first computer is configured for receiving said operating sequence command data from a command data unit connected to said network.

7. The system of Claim 1, further comprising a reconstruction unit that is configured for storing said reconstruction data in an encrypted form.

8. The system of Claim 7, wherein said reconstruction unit is associated with a user identification unit that is configured for gathering user specific data.

9. The system of Claim 7, wherein said reconstruction unit is associated with a billing unit that is configured for executing a financial transaction with said first user in response to said first computer accessing said reconstruction data.

10. The system of Claim 1, wherein said first computer comprises a decryption unit that is configured for:

accessing said reconstruction data over said network; and

using said reconstruction data and said encrypted form of said electronic document to make said electronic document available for use in a suitable decrypted form.

11. The system of Claim 1, wherein said system is configured so that said electronic document cannot be stored on said first computer in a decrypted form.

12. The system of Claim 1, wherein said data segments are arranged in a hierarchical form as at least a first and a second group of data segments, said first group of data segments being configured to be downloaded via said at least two downloads in accordance with said operating sequence command data, and said second group of data segments being configured to be reconstructed in accordance with said reconstruction data.

13. The system of Claim 12, wherein said reconstruction data is associated with said first group of data segments.

14. The system of Claim 13, wherein said reconstruction data is dynamically generated during said at least two downloads.

15. A peer-to-peer system for distributing electronic documents, said system comprising:

a first peer computer that is associated with a first user; and

a network over which information may be transferred from said first peer computer to a second peer computer that is associated with a second user, wherein said first peer computer is configured for:

dividing an electronic document into a plurality of data segments;

producing an encrypted form of said electronic document that is encrypted via an arrangement of said data segments, said arrangement being determined by a set of operating sequence command data;

transmitting said plurality of data segments to said second peer computer; and

generating a set of data that is useable for generating said set of operating sequence command data.

16. The peer-to-peer system of Claim 15, wherein said first peer computer is configured for transmitting said set of data to a third computer within said peer-to-peer system.

17. The peer-to-peer system of Claim 15, wherein:
 - said electronic document is a first electronic document;
 - said plurality of data segments is a first plurality of data segments;
 - said set of data is a first set of data;
 - said set of operating sequence command data is a first set of operating sequence command data; and
 - said second peer computer is configured for:
 - dividing a second electronic document into a second plurality of data segments;
 - producing an encrypted form of said second electronic document that is encrypted via an arrangement of said second plurality of data segments, said arrangement of said second plurality of data segments being determined by a second set of operating sequence command data;
 - transmitting said second plurality data segments to said first peer computer; and
 - generating a second set of data that is useable for generating said second set of operating sequence command data.

18. The system of Claim 17, wherein said second peer computer is configured to transmit said second plurality of data segments to said first peer computer while receiving said first plurality of data segments from said first peer computer.

19. The system of Claim 17, wherein said second peer computer is configured to transmit said second plurality data segments to said first peer computer over a first bandwidth while receiving said first plurality of data segments from said first peer computer over a second bandwidth.

20. The peer-to-peer system of Claim 15, wherein said first peer computer is configured to determine whether distribution of said electronic document is authorized and, in response to determining that distribution of said electronic document is not authorized, preventing transmission of said plurality of data segments to said second peer computer.

21. The peer-to-peer system of Claim 15, wherein said step of producing an encrypted form of said electronic document comprises reordering two or more of said plurality of data segments.

22. The peer-to-peer system of Claim 15, wherein said step of producing an encrypted form of said electronic document comprises inserting one or more extra data segments into said plurality of data segments.

23. The peer-to-peer system of Claim 15, wherein said step of producing an encrypted form of said electronic document comprises removing at least one of said plurality of data segments from said plurality of data segments.

24. The peer-to-peer system of Claim 15, wherein said step of producing an encrypted form of said electronic document comprises substituting at least one of said plurality of data segments with another data segment.

25. The peer-to-peer system of Claim 15, wherein said first peer computer is configured to use information about exchanged, removed, added or substituted data segments to generate reconstruction data.

26. The peer-to-peer system of Claim 15, wherein said first peer computer is configured to determine whether said electronic document has been encrypted by virtue of one or more of said data segments being removed or replaced.

27. The peer-to-peer system of Claim 15, wherein said electronic document is an audio, video, or animation file.

28. The peer-to-peer system of Claim 15, wherein said electronic document comprises program data.

29. A method of distributing electronic documents, said method comprising the steps of:

receiving a request for an electronic document from a first peer computer connected to a network;

identifying a plurality of data network addresses, each of said plurality of data network addresses corresponding to a location of at least one of a plurality of data segments associated with said electronic document, said plurality of data segments being stored, in a distributed manner, on a plurality of peer computers;

providing an operating sequence command set that comprises said plurality of data network addresses; and

transmitting said operating sequence command set to said first peer computer so that said first peer computer may use said operating sequence command set to access at least one of said plurality of data segments.

30. The method of Claim 29, wherein said first peer computer is configured to use said operating sequence command set to store said plurality of data segments in a predetermined sequence.

31. The method of Claim 30, wherein said predetermined sequence is customized to said first peer computer.

32. A method of distributing electronic documents, said method comprising the steps of:

receiving operating sequence command data;

accessing an electronic document over a network by downloading, via one or more downloads from each of a plurality of computers, a plurality of data segments that are associated with an electronic document and that represent an encrypted form of said electronic document, said electronic document being encrypted by the effect of said operating sequence command data determining their order, said plurality of data segments not being usable by a user as downloaded;

accessing reconstruction data over said network; and

using said reconstruction data and said encrypted form of said electronic document to make said electronic document available for use in a suitable decrypted form.

33. A system for distributing electronic documents within a peer to peer network, said system comprising:

a first peer computer associated with a first user;

a second peer computer associated with a second user; and

a data server unit, wherein:

said first peer computer is configured for dividing an electronic document into two or more data segments, said two or more data segments being associated with at least one correct playback sequence;

said data server unit is configured for generating an encryption sequence for said two or more data segments, said encryption sequence being different than said correct playback sequence; and

said second peer computer is configured for: (a) receiving at least one of said data segments from said first computer, and (b) storing said at least one data segment in a file that corresponds to an encrypted form of said electronic document in which the data segments that comprise said electronic document are stored in said encryption sequence.

34. The system of Claim 33, wherein:

said second peer computer is configured for dividing said electronic document into two or more data segments, said two or more data segments being associated with said at least one correct playback sequence; and

said first peer computer is configured for: (a) receiving at least one of said data segments from said second computer, and (b) storing said at least one data segment in a file that corresponds to an encrypted form of said electronic document in which the data segments that comprise said electronic document are stored in said encryption sequence.

35. The system of Claim 34, wherein:

said system comprises a third computer;

said third computer is configured for dividing said electronic document into two or more data segments, said two or more data segments being associated with said at least one correct playback sequence; and

said third computer is configured for: (a) receiving at least one of said data segments from said second computer, and (b) storing said at least one data segment in a file that corresponds to an encrypted form of said electronic document in which the data segments that comprise said electronic document are stored in said encryption sequence.

36. A system for distributing electronic documents of a predetermined document data structure in a publicly accessible electronic data network, said system comprising:

a plurality of participant units that are connected to the electronic data network at least part of the time, each of the participant units being associated with a user and being constructed for executing a download of an electronic document by a participant unit or a server unit connected to the data network as well as for opening the electronic document by means of a playback unit, and wherein:

the participant units are constructed for accessing the electronic document over the publicly accessible electronic data network in such a way that multiple downloads of a plurality of associated data segments are executed, where at least one download is done by another participant unit that is associated with another user;

the participant units receive document and/or participant specific operating sequence command data from a command data unit connected to the electronic data network;

the plurality of electronic data segments are available to the participant through a plurality of downloads, are associated with the electronic document, and represent the form of the electronic document, the electronic document being encrypted by the effect of the operating sequence command data determining the order of the electronic data segments, which are not usable by the user in the way provided;

a reconstruction unit is connected to the electronic data network, the reconstruction unit being configured for storing reconstruction data related to an electronic document in an encrypted form; and

each of the participant units comprises a local decryption unit that is designed for at least one access to the reconstruction unit for each electronic document over the electronic data network and to bring together the encrypted

form for making said electronic document available for use in a suitable decrypted form.

37. The system of Claim 36, wherein the participant units are configured so that the electronic document cannot be stored on a participant side in the decrypted form.

38. The system of Claim 36, further comprising a user identification unit that is associated with the reconstruction unit and that is configured for gathering user specific data.

39. The system of Claim 36, further comprising a user identification unit that is associated with the reconstruction unit and that is configured for assigning or managing user or user group specific access rights.

40. The system of Claim 36, further comprising a billing unit that is associated with the reconstruction unit and that is configured for executing a financial transaction with the user.

41. The system of Claim 36, further comprising a proxy unit that is connected to the electronic data network, and that is configured for:
receiving the operating sequence command data; and
executing a plurality of downloads on behalf of a respective participant unit.

42. The system of Claim 36, wherein each of the participant units comprises a publication unit that is configured for:

dividing the electronic document into a plurality of data segments;

producing a distributable version of the electronic document, the distributable version being encrypted via the arrangement of the data segments, and the arrangement of data segments being determined by operating sequence command data;

transmitting the plurality of electronic data segments to at least one other participant unit; and

recording document-specific data on a document name unit that is connected to the electronic data network and that comprises a data server unit that is connected to the electronic data network and that is configured for storing data about one or more data segments stored on at least one other participant unit, said data being used to generate operating sequence commands.

43. A system for distribution of electronic documents of a predetermined data structure in a publicly accessible electronic data network, said system comprising:

a plurality of participant units connected to the electronic data network at least part of the time, each of said participant units being:

associated with a user,

configured for executing a download of an electronic document from a participant unit connected to the electronic data network or from a server unit, and

configured for opening the electronic document by means of a user-side playback unit, wherein each of said participant units comprises a publication unit that is configured for:

dividing the electronic document into a plurality of data segments;

producing a distributable version of the electronic document, the distributable version being encrypted via the arrangement of the data segments, and the arrangement of data segments being determined by operating sequence command data;

transmitting the plurality of electronic data segments to at least one other participant unit; and

recording document-specific data on a document name unit that is connected to the electronic data network and that comprises a data server unit that is connected to the electronic data network and that is configured for storing data about one or more data segments stored on at least one other participant unit, said data being used to generate operating sequence commands.

44. The system according to Claim 43, further comprising a script generating unit that operates together with the data server unit, and that is configured for generating the operating sequence command data.

45. The system of Claim 44, wherein the script generating unit is a script server unit or a part of the participant unit.

46. The system of Claim 43, wherein:

the publication unit comprises an identification and/or verification unit for distributing the document, and

the publication unit is configured for:

performing signature-based screening on a document to be distributed for user-side authorization,

in response to an outcome of the authorization screening, preventing the generating, distribution, transmission and/or deposit of the screened document; and

comparing document-specific identification data with identification data received from an identification server unit connected to the electronic data network.

47. The system of Claim 43, wherein the system is configured to:
generate the encrypted form of the electronic document by means of an encryption unit as part of the publication unit and/or to generate the electronic document in a decrypted form by means of the local decryption unit performing the following operations on the data segments of the document data structure of the electronic document:
exchanging and/or removal of a data segment, and/or
addition of a data segment to a predetermined position in a series of data segments, and/or
substituting a data segment with a data segment preferably not contained in the original electronic document.

48. The system of Claim 47, wherein said operations are performed by means of computer access to electronic storage areas of an electronic encryption unit associated with the data segments of the document data structure.

49. The system of Claim 47, wherein said operations are performed by means of computer access to electronic storage areas of a local decryption unit electronic encryption unit associated with the data segments of the document data structure.

50. The system of Claim 47, wherein the electronic encryption unit is designed for generating reconstruction data with information about the exchanged, removed added and/or substituted data segments.

51. The system of Claim 47, further comprising format recognition means associated with the participant unit, the format recognition means being configured for:

enabling the user to determine whether an electronic document was encrypted by exchanging, removal, addition and/or substitution of data segments, and

extracting an address of at least one of the data segments for access to the reconstruction data.

52. The system of Claim 47, wherein the electronic document is selected from a group comprising: audio data, video data, animation data, simulation data and program data.

53. The system of Claim 47, wherein the data format of the electronic document is selected from a group consisting of: MP3, MPEG, and XML.

54. The system of Claim 47, wherein:

the electronic data segments are present in hierarchy form as at least a first and a second group of data segments,

the first group of data segments is configured for being downloaded, via the plurality of downloads, by means of the electronic operating sequence command data; and

the second group of data segments is subordinate to the first group of data segments and is designed for being reconstructed by means of assigned reconstruction data.

55. The system of Claim 54, wherein the reconstruction data is associated with the first group of data segments.

56. The system of Claim 55, wherein the reconstruction data is dynamically generated during a plurality of downloads.

57. The system of Claim 56, wherein the electronic document comprises an audio or video stream and the command data unit and the participant unit are configured so that two or more of the plurality of downloads can occur simultaneously.

58. The system of Claim 57, wherein the plurality of downloads are completed by a plurality of participant units.

59. The system of Claim 58, wherein:

- the operating sequence command data unit is configured for generating the operating sequence command data; and
- the participant unit is configured to simultaneously send and receive electronic data segments.

60. The system of Claim 59, wherein the operating sequence command data unit is configured so that during simultaneous sending and receiving of the electronic data segments, a different bandwidth for the sending and receiving operations is utilized.

61. A method of distributing copyright-protected electronic documents of a predetermined document data structure in a publicly accessible electronic data network, comprising the steps of:

receiving an inquiry for an electronic document from a participant unit connected to the electronic data network;

identifying a plurality of addresses that correspond to the storage locations of a plurality of data segments that are associated with the electronic document, the data segments being stored on a plurality of participant units in a distributed manner;

providing an operating sequence command set that contains the addresses in a predetermined sequence;

transmitting the operating sequence command set to the participant unit; and

using the operating sequence command set to access the plurality of data segments for purposes of storing the plurality of data segments on a participant-side in the predetermined sequence.

62. The method of Claim 61, wherein the predetermined sequence is provided individually and in an identifying way for the participant unit transmitting the inquiry.